Summary of International Scanning Program
For
Meeting the 21st Century Challenges of System Performance
Through Better Operations

The International Scanning Program for Meeting the 21st Century Challenges of System Performance Through Better Operations (a.k.a. 21st Century Operations) was jointly sponsored by the Federal Highway Administration (FHWA), an agency of the U.S. Department of Transportation, and the American Association of State Highway and Transportation Officials (AASHTO).

BACKGROUND

Surface transportation systems developed in the United States during the last century are reaching their capacity, especially in metropolitan areas. Traffic congestion is increasing as we run out of capacity to put more cars and trucks on the roads. Because our transportation modes have been developed and operated as unique systems, intermodal coordination, both for passengers and freight, is in its infancy in most areas.

As our surface transportation systems are reaching capacity, a new element is being added to our nation's infrastructure. A network of telecommunication systems complimented by wireless and satellite systems now links our nation.

The solutions for meeting our nation's mobility needs in the 21st Century need to go beyond building more and wider roads. Our focus needs to shift from "car and truck moving capacity" to "people and freight moving capacity." Our transportation system will still be based on rail and roads, but we can maximize these elements with the integration of communication systems, technology advances, and computing power.

OBJECTIVES, GOALS, AND PANEL COMPOSITION

The objective of this scanning tour was to investigate the historical and contemporary context for transportation operations in each country visited. Additionally, the team wished to focus on the policies and strategies that are planned for the future to sustain good system performance and operational practices in these countries. The U.S. delegation's goal is that the lessons learned from this scan will help enable United States transportation agencies to evolve from a culture based primarily on construction to one that emphasizes system operations across all modes and balances that with facility expansion.

Germany, the Netherlands, France, and the United Kingdom were identified as countries where systems operations issues would relate to issues in the United States and where solutions to intermodal and capacity challenges could be beneficial when solving similar challenges with our own transportation systems.

The Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO) jointly sponsored the scanning tour. FHWA's International Technology Scanning Program assembled the U.S. delegation. The delegation included members representing the following organizations: AASHTO; FHWA; the Georgia, Illinois, Utah, and Washington State departments of transportation; the transportation departments of the cities of Boston, Chicago, and Los Angeles; and TRANSCOM, a regional transportation operations coordinating committee including traffic and transit agencies in the New York/New Jersey/Connecticut metropolitan area.

GENERAL CONCLUSIONS

The hosting countries are experiencing many of the same economic, cultural, and transportation trends as the United States. With growing economies, populations, and employment, urban areas are expanding beyond their traditional bounds. Auto ownership and use is growing and leisure trips make up a larger portion of travel. Truck traffic is increasing and the average trip is longer.

Europeans share similar values, which are reflected in their planning goals for their transport systems. Their highest priority is safety. They consider affordable transportation to be a key to healthy economies. They are committed to minimizing transportation's negative environmental effects by reducing emissions, noise, and visual intrusion. Mobility is fun and contributes to a higher overall quality of life.

Transportation officials share a customer focus. Both strategic investment and tactical operations decisions are driven by safety and customer preference.

While there are many commonalities between the United States and Europe, different technologies and operating practices have been developed to meet local needs. This scanning tour was an opportunity to view new solutions and to evaluate their potential benefits to the United States.

The host countries provided the U.S. delegation with a wealth of information on their strategies for meeting the 21st Century challenges of system performance through better operations. The delegation met on the final day of the tour to review their findings. At that meeting, they developed the following list of techniques and practices they feel are of interest and may have potential for implementation in the United States.

Policy

Safety

?? Many initiatives focused on safety. National research programs evaluate changes in practice and their effect on safety.
?? Use of surveillance cameras for traffic speed enforcement resulted in significant reductions in accident rates.
?? Effective use of variable message signs to convey information on traffic conditions, weather, and lane closures, and to set variable speed limits for traffic lanes. The speed limit for each lane was set by computer software based on real-time traffic data.

Transportation Service Integration

?? Intermodal transfers should be easy, seamless, and transparent to the user regardless of mode or jurisdiction.

Intelligent Transportation System (ITS)

?? Intelligent transportation techniques are deployed to maximize the capacity of existing roads without deviating from safety standards. Examples include variable speed limit signs and bus priority at traffic signals.
?? The wider use of ITS provides data to evaluate the performance and safety of the transportation system.

Pre-Trip Traveler Information

?? Consumers prefer to have a single authority provide pre-trip information for all modes and service providers. This is especially important when different private operators provide linking transit services.
?? Consumers want pre-trip information to be available through different media (phone, Internet, printed maps, etc.).

Real-Time Traveler Information

?? Attempts to distribute real-time traveler information via privately-owned subscription services have not been profitable.
?? When delays occur during their trip, travelers want specific information on the length of delay and alternate routes of travel.

Transit

?? Exclusive bus lanes and bus priority at traffic signals keeps buses running on time and encourages transit use.
?? The universal transit pass, good for all transit modes in a region, is popular and convenient.

Privatization

?? Across the European Union, there is an emphasis on privatizing transportation, from privatized bus and maintenance services to the operation and ownership of rail lines.
?? Privatization appears to be heavily subsidized by the government to assure that transport services are available for citizens whether or not the user fees can pay for their full cost.
?? Private transport services are strictly regulated.
?? The government provides the principal source of funds for operating and maintaining both public and private transport. However, this is supplemented by transit fares and highway tolls where available.
?? Private sector contracts must be focused on customer service, including qualitative and quantitative performance measures.

Balancing Passenger and Freight Operations

?? In all of the countries, transportation infrastructure is most often shared for both passenger and freight movement.
?? Governments are trying to achieve a better balance and to maximize the utility of the system without compromising safety.
?? In rare cases, lane segments are dedicated to trucks.

Strategic Investment

?? Governments at all levels seek to optimize the use of existing facilities through better operations.
?? They seek to extend the useful life of existing facilities by preventive maintenance to avoid the cost and disruption of major reconstruction.
?? New construction is being undertaken in each of the countries to fill the service gaps. An example of this is completing the last segment of the outer ring road of the Paris metropolitan area.
?? As in the United States, all levels of government are undertaking improvements for safety, maintenance, and expansion of the existing system, in that order.

Integration

Integration across modal lines is not as extensive as the U.S. delegation expected.

?? Lack of integration:
    ?? Highway and transit information is rarely integrated.
    ?? Some new systems have been built without including integration.
    ?? There are conflicting policies between agencies on capital projects for circumferential highway and transit links in the Paris metropolitan region.
?? Positive integration
    ?? The Mayor of London and the French Mobility Authority are striving for integration.
    ?? Hampshire County in the United Kingdom integrates highway and transit information.

Integration within each mode was greater than integration across modal lines.

?? The Netherlands has extensive integration of all highway-planning functions.
?? France has multi-agency operational integration.
?? Recent delegation in several countries has clarified the transportation management roles of various governmental levels.
?? Agencies share real-time information and cooperate in managing traffic during incidents, both among multiple regions and within individual regions.
?? In London, there is conflict between providing infrastructure rehabilitation and developing new projects that are more visible.

The U.S. delegation didn't discover any quick solutions for integration of transportation systems and information.

?? In the United States we are trying to combine traffic management functions in one place.
?? The U.S. delegation discovered that interagency cooperation can be more important than providing a common physical location.

Resources

Reducing congestion and integrating transportation systems and services is a consistent national commitment.

?? This commitment is manifested in different ways in each country.
?? Management and operations is a given, not an afterthought.
?? Overall funding levels for management and operations activities are higher than in the United States.
?? Management and operations research and development activities are closely related to public sector implementation plans and are well funded.

There is a strong national government presence in funding of management and operations activities in large urban areas and in the national transportation system of each country.

The level of contracting out for management, operations, and public transportation services is higher than in the United States.

?? There is more focus on quality and customer service as selection criteria.
?? Contracting for services creates incentives for making improvements that can reduce operating subsidies and enhance service, thus reducing complacency.

Asset management is recognized as critical to effective management and operations of the transportation system.

?? Resources to perform asset management activities need to be identified and protected.
?? "Know thy assets."

Methods

Traffic Management Strategies

?? Standardized software applications.
?? Camera and video for transit monitoring and enforcement.
?? Exclusive lanes for buses and trucks.
?? Integration of bicycle facilities into roadway and transit design.
?? Security cameras at high volume transit stops.
?? Onboard devices for bus headway balancing.
?? Use of the hard shoulder as a lane during incidents and to relieve congestion.
?? Use of ITS in all transportation-related functions.
?? Use of circumferential transit lines to complement radial lines.
?? Overcome jurisdictional barriers for traffic management.
?? Use of roadway scheduling for utilities and contractors to encourage timely completion of roadwork.

Traveler Information Strategies

?? Use of activated blank-out and VMS (variable message sign) signing to convey real-time traffic information.
?? Use of VMS to give travel time, travel delay, and length of queue.
?? Offer real-time congestion information on the Internet.
?? Certification of traveler information providers for quality control.
?? Use of variable speed limit signs.
?? Use of cell phones to disseminate traveler information.
?? Use of GPS on fleet vehicles, including taxis, for travel time data probes.
?? Use accessible devices including tactile devices for the blind.

Toll and fare strategies

?? Standardized toll collection technology.
?? Use of multi-operator transit cards.

RECOMMENDATIONS

The U.S. delegation is formulating recommendations based on their findings. The following draft recommendations have been developed; however, the team is still in the process of refining them and developing implementation strategies. Research recommendations and problem statements will be sent to the appropriate AASHTO committees and to NCHRP to encourage additional research activity.

1. Make a consistent national commitment to reducing congestion and integrating surface transportation systems and services.
   - ?? Increase overall funding levels for management and operations activities.
   - ?? Increase funding for transportation management and operations research.
   - ?? Align research activities with public sector implementation plans.

2. Establish a strong federal presence in funding of management and operations activities in large urban areas and on the National Highway System.

3. Focus on safety and customer service as primary objectives for transportation system management and operations activities.

4. Strive for seamless and transparent modal and jurisdictional transportation system integration, including one-stop shopping for traveler information and single-fare media for transit, tolls, parking, etc.

5. Focus on strategic investments in the surface transportation system that include:
   - ?? Optimizing the use of existing facilities.
   - ?? Preserving existing facilities through preventive maintenance and rehabilitation.
   - ?? Making major investments in new capacity to close gaps and provide additional services.
   - ?? Using customer-based metrics to drive strategic and tactical decisions.

6. Continue to focus on balancing passenger and freight operations.

7. Continue to contract out for management and operations activities and public transportation services where feasible.
   - ?? Use customer service and quality-based award criteria.
   - ?? Create incentives for making improvements that will reduce public costs and enhance service.

8. Continue to use privatization, tolls, and debt financing where appropriate, but recognize limitations.

9. Continue to encourage and experiment with selling traveler information for a profit. However, basic traveler information should be free to the public.

10. Demonstrate or deploy the following technologies on a more widespread basis:
    - ?? Variable speed limits.
    - ?? Dynamic message signs.
    - ?? Multi-operator smart cards.
    - ?? Standardized software applications.
    - ?? Integration of taxis into public transit systems.

- ?? Video for enforcement and security.
- ?? Reserved lanes for transit vehicles and trucks.
- ?? Use hard shoulders as travel lanes.
- ?? Use GPS on fleet vehicles as travel time data probes.
- ?? Provide pre-trip traveler information via the Internet.
- ?? Require certification of traveler information providers.
- ?? Coordinate scheduling of maintenance and utility work to minimize traffic disruptions.
- ?? Integrate bicycle facilities in roadway and transit design.
- ?? Use on-board systems for headway balancing on transit buses.
- ?? Use transit priority measures to enhance schedule reliability and customer service.

DISSEMINATION OF FINDINGS, RECOMMENDATIONS, AND IMPLEMENTATION STRATEGIES

The 21st Century Operations Scanning Tour Final Report will contain further discussion and information on the recommendations and implementation strategies. The U.S. delegation will share their findings and promote the recommendations to their constituencies through distribution of the final report, published articles, and presentations at meetings and conferences.

The delegation will present their findings initially at the AASHTO Standing Committee on Highways in Wichita, KS, May 2001; 2001 AASHTO meeting in Fort Worth, Texas, November 2001; Transportation Research Board (TRB) meeting in Washington, DC, January 2002; Institute of Transportation Engineers; ITS America; National Committee on Uniform Traffic Control Devices; National Association of City Transportation Officials; and the American Society of Civil Engineers. Team members will also make presentations at a variety of local, regional, state, and national transportation venues. Other avenues for dissemination include articles in transportation journals such as *Better Roads* and *Public Roads*.

In order to disseminate the findings and recommendations of the U.S. delegation as widely as possible, the Final Report will be published on the AASHTO and FHWA web sites and its availability will be announced through electronic distribution lists, including AASHTO and TRB committees and subcommittees and various list servers.

Research recommendations and problem statements will be sent to the appropriate AASHTO committees and to NCHRP to encourage additional research activity.